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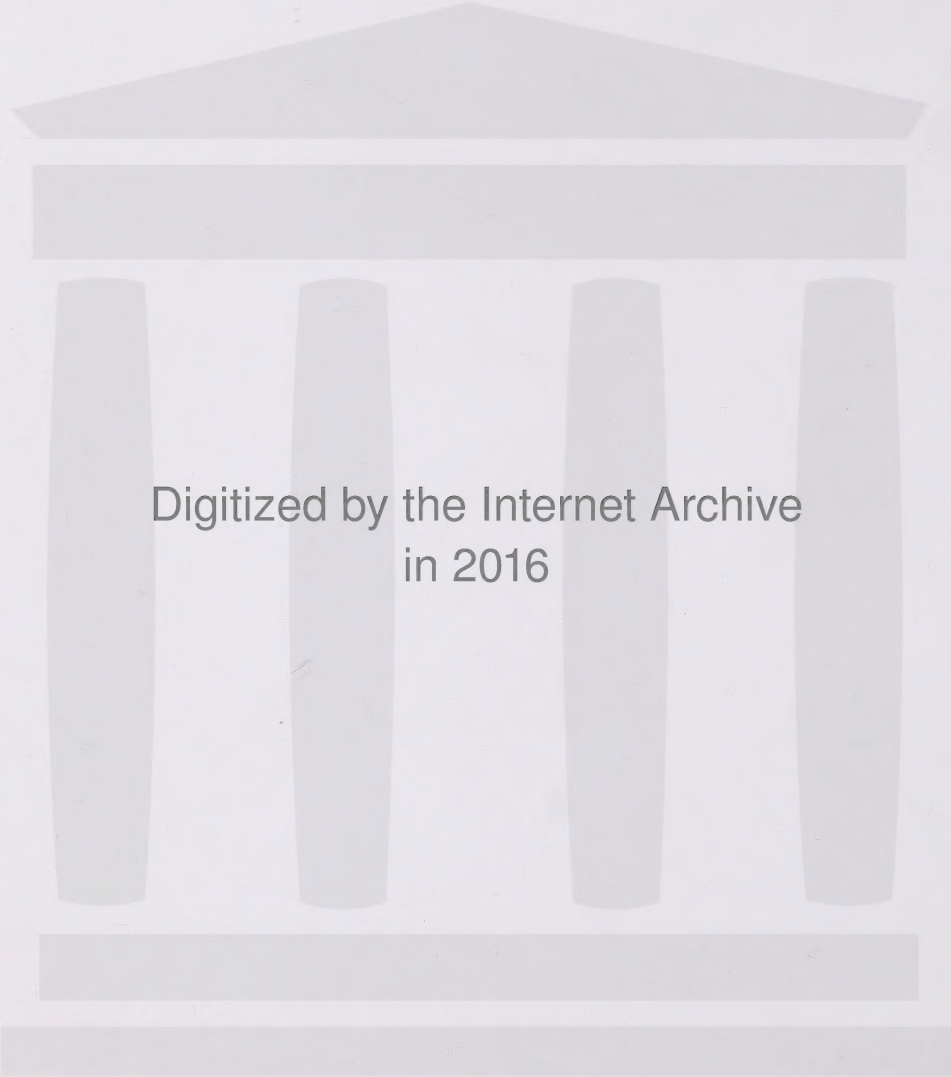
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2008 Reference Guide

Agricultural Operation Practices Act (AOPA)

A guide to the legislation for confined feeding operations (CFOs) and manure management requirements for all agricultural operations in Alberta, including 2006 amendments





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Introduction

The purpose of this guide is to provide agricultural operations in Alberta with information on:

- How the *Agricultural Operation Practices Act* (AOPA) applies to various agricultural operations that handle manure.
- The requirements and regulations under AOPA that deal with siting; manure storage, collection and application; feeding & bedding sites; livestock corrals; soil testing and analysis; and record keeping.
- The issues related to ongoing compliance and enforcement.

The Agricultural Operation Practices Act

"The purpose of AOPA is to ensure that the Province's livestock industry can grow to meet the opportunities presented by local and world markets in an environmentally sustainable manner."

In January 2002, under AOPA, the Province assumed responsibility for issuing permits for confined feeding operations (CFOs) and for setting and enforcing manure management standards. AOPA was amended in June 2004, and the regulations were updated in October 2006 to clarify the original intent of the legislation.

AOPA and its three associated regulations establish province-wide permitting requirements and standards for all agricultural operations that handle manure.

Who Does AOPA Apply To?

AOPA applies to a variety of livestock categories including poultry, horses, cattle, sheep, swine, goats,

bison, fur-bearing animals raised in captivity and domestic cervids (deer and elk) as defined in the *Livestock Diversification Act* (Act, Section 1).

It also applies to those who handle manure such as cropping operations that use manure as a fertilizer and custom manure applicators.

What is a Confined Feeding Operation?

A confined feeding operation (CFO) is defined as a fenced or enclosed land or buildings where livestock are confined for the purposes of growing, sustaining, finishing or breeding by means other than grazing, and any other building or structure directly related to that purpose. Backgrounding operations that meet the threshold animal numbers are also considered to be CFOs (see Table 1). CFOs do not include residences, grazing livestock operations, livestock seasonal feeding and bedding sites, equestrian stables, auction markets, race tracks or exhibition grounds (Act, Section 1).

How Does AOPA Define Manure?

Manure includes livestock excreta, associated feed losses, bedding, litter, soil and wash water but does not include manure to which the *Fertilizer Act* (Canada) applies (Act, Section 1). Manure, compost and composting material have the same requirements under AOPA as long as they do not contain dead animals or third party feedstock. Different requirements exist for compost or manure that contains dead animals and third party feedstock, which is regulated under separate legislation administered by Alberta Agriculture and Rural Development's Regulatory Services and Alberta Environment.

How Does AOPA Apply to Various Operations?

AOPA applies to a number of operations and how they deal with various practices ranging from manure application to record keeping.

All Livestock Producers and Applicators of Manure

- Short-term solid manure storage
- Manure application
 - incorporation requirements
 - setbacks
 - soil nitrate-nitrogen and salinity limits
 - soil testing and analysis
- Record keeping
- Ongoing compliance and enforcement

CFOs That Existed Before January 1, 2002

- Permit rules and conditions
- Manure storage and collection areas
- Manure application
 - incorporation requirements
 - setbacks
 - soil nitrate-nitrogen and salinity limits
 - soil testing and analysis
- Record keeping
- Ongoing compliance and enforcement

New and Expanding CFOs

- Permit rules and conditions
- Siting requirements
- Manure storage and collection areas
- Manure application
 - incorporation requirements
 - setbacks

- soil nitrate-nitrogen and salinity limits
- soil testing analysis

- Record keeping
- Ongoing compliance and enforcement

Cow/Calf Producers

- Short-term solid manure storage
- Seasonal feeding and bedding (wintering) sites and livestock corrals
- Manure application
 - incorporation requirements
 - setbacks
 - soil nitrate-nitrogen and salinity limits
 - soil testing and analysis
- Record keeping
- Ongoing compliance and enforcement



Who Administers AOPA and Its Regulations?

The Natural Resources Conservation Board (NRCB) administers AOPA and its regulations. NRCB approval officers process applications and issue permits, while NRCB inspectors follow up on complaints and compliance related issues. The NRCB considers requests for review of approval officer and inspector decisions.

The Board must decide if the issues raised in the request contain sufficient merit to warrant a review.

Part 1 of the Act outlines how nuisances such as odour, dust, noise and smoke resulting from agricultural activities are dealt with. The AOPA Part 1 Nuisance Regulations are administered by the Farmers' Advocate. These are not dealt with in this publication.

Specific Rules and Regulations under AOPA

The following sections provide more detail on some of the requirements and regulations under AOPA.

Permit Rules and Conditions

Under AOPA, the NRCB issues three kinds of permits for building or expanding a CFO, manure storage facility or manure collection area. The type of permit depends on the nature of the activity, the number of animals, and animal species (Matters Regulations, Schedule 2).

- **Registrations** are permits for smaller CFOs.
- **Approvals** are permits for larger CFOs.
- **Authorizations** are permits for construction of manure storage facilities or manure collection areas.

The legislation does not prevent municipalities from regulating animal operations not listed in the legislation or CFOs with animal numbers that fall below the registration size threshold. These animal numbers are outlined in the Matters Regulation, Schedule 2 (see Table 1).

EXISTING AND EXPANDING CFOs

All CFOs, manure storage facilities and manure collection areas that existed prior to January 1, 2002 are deemed to have a permit under AOPA. The NRCB has sole responsibility for enforcing conditions on such permits. The NRCB also has the authority to amend the terms and conditions of permits issued for CFOs and manure storage facilities.

Existing CFOs do not have to upgrade facilities to meet AOPA standards when expanding their operation unless the facility is posing a risk to the environment or an inappropriate disturbance, as determined by the NRCB. The NRCB can investigate any risk to the environment or inappropriate disturbance, enforce terms and conditions in existing development permits, or require actions to be taken to mitigate the risk or inappropriate disturbance.

An approval, registration or authorization is required by an existing CFO if expansion is to take place. The expansion refers to any construction that is completed to accommodate an increase in livestock numbers or

amount of manure being collected and stored on site. Operators cannot begin

construction until a permit is obtained. Those who hold an approval, registration or authorization must comply with the terms and conditions set out in these permits (Act, Section 13).



When an existing CFO expands, only the new or expanded portions of the facility that collect or store manure must meet the standards in the regulations. The rest of the existing operation will be evaluated with respect to environmental risk. If there is a risk to the environment, the operator will be required to address the risk.

When a CFO is sold or transferred to a new owner, the new owner must notify the NRCB of the change in ownership (Act, Section 28).

Table 1 - Matters Regulation, Schedule 2

Category of Livestock	Type of Livestock	Number of Animals (Registrations)	Number of Animals (Approvals)
Beef	Cows/finishers (900+ lbs)	150-349	350+
	Feeders (450-900 lbs)	200-499	500+
	Feeder calves (<550 lbs)	360-899	900+
Dairy ^{1, 2}	Lactating cows ³ (count lactating cows only - associated dries, heifers and calves are not counted)	50-199	200+
Swine	Farrow to finish ⁴	30-249	250+
	Farrow to wean ⁴	50-999	1000+
	Farrow only ⁴	60-1249	1250+
	Feeders/boars	500-3299	3300+
	Roasters	500-5999	6000+
	Weaners	500-8999	9000+
Poultry	Chicken-breeders	1000-15999	16000+
	Chicken-layer (includes associated pullets)	5000-29999	30000+
	Chicken-pullets/broilers	2000-59999	60000+
	Turkeys-toms/breeders	1000-29999	30000+
	Turkey-hens (light)	1000-29999	30000+
	Turkey-broiler	1000-29999	30000+
	Ducks	1000-29999	30000+
	Geese	1000-29999	30000+
Horses	Pregnant Mare Urine (PMU)	100-399	400+
	Feeders>750 lbs	100-299	300+
	Foals<750 lbs	350-999	1000+
	Mules	100-299	300+
	Donkeys	150-449	500+
Sheep	Ewes/rams	300-1999	2000+
	Ewes with lambs	200-1999	2000+
	Lambs	1000-4999	5000+
	Feeders	500-2499	2500+
Goats	Meat/milk	200-1999	2000+
	Nannies/billies	400-2999	3000+
	Feeders	500-4999	5000+
Bison	Bison	150-349	350+
Cervid	Elk	150-399	400+
	Deer	200-999	1000+
Wild Boar	Feeders	100-299	300+
	Sow (farrowing)	50-99	100+

¹ When dairy replacement heifers are housed away from the dairy, treat as Beef - feeders.² When dairy calves are housed away from the dairy, treat as Beef - feeder calves.³ Dairy count includes lactating cows only.⁴ Swine count includes sows only.

Siting Requirements

Siting of a CFO, manure storage facility or manure collection area is an integral part of protecting the environment including protecting surface water and groundwater resources and minimizing nuisance impacts.

DETERMINING THE MINIMUM DISTANCE SEPARATION (MDS)

The MDS is a setback established between a CFO facility and the neighbouring residences that are in existence at the time the application is submitted. Its purpose is to minimize the impact of odour. It is measured from the outside walls of neighbouring residences to the point closest to the CFO's manure storage facilities or manure collection areas.

Each operation has its own MDS that is determined by various characteristics or factors of the operation. These factors are assigned values from which an operation's MDS is calculated. The MDS is calculated by the approval officer when the Part 1 application is submitted. Details on calculating the MDS can be found in Schedule 1 of the Standards and Administration Regulation.

Livestock Siting Unit (LSU) is the basis for determining the MDS. The LSU is a method for comparing the odour potential of livestock facilities based on the type of livestock, manure production and manure handling system. The LSU for each livestock type is determined by multiplying the number of animals (not animal units) by the appropriate LSU factor. At a multiple-species operation, the LSUs for each livestock type are added together to get the total LSU for that operation.

Odour Objective is based on the municipal land zoning of neighbouring residences. There are four categories that determine the odour objective used in the MDS calculation for that residence.

- Category 1 – residences on land zoned for agricultural purposes (e.g., farmstead, acreage residences),
- Category 2 – residences on land zoned for non-agricultural purposes (e.g., country residential, rural commercial businesses),
- Category 3 – residences on land zoned for high use recreational or commercial purposes,
- Category 4 – residences on land zoned for large-scale country residential, rural hamlet, village, town or city.

The MDS is determined for each category ranging from the least separation for a Category 1 residence to the greatest separation for a Category 4 residence. The MDS will always be at least 150 metres unless:

- The owner of the residence waives the requirements in writing,
- The owner or operator of the CFO owns or controls the residence, or
- An existing CFO is upgrading its operation and is not increasing the volume of manure produced.

Technology Factor is the effect a manure storage or handling system will have on reducing the odour nuisance level. It allows applicants who choose to use odour mitigating technology in their operation to request an adjustment of the MDS requirement accordingly. Operators wanting to benefit from this are required to provide, to the satisfaction of the Approval Officer, information that substantiates the use of a different technology factor.

Dispersion Factor allows for a variance to the MDS, based on unique climatic and topographic influences at the site that can influence odour dispersion and can include:

- Topography. The effect of topographical features, such as hills and valleys, on air dispersion.

- Screening. The effect of natural or constructed screening, such as windbreaks, trees, fences or screens, on air dispersion from the manure storage facility.
- Microclimate. Meteorological data may show a significant alteration in odour intensity or frequency in relation to neighbouring land use. Some of these factors include temperature, humidity, predominant wind direction and intensity.

Expansion Factor is only applicable to operations that are increasing the size of the facility to store more manure or to accommodate more livestock. This factor may only be applied if three or more years have passed since the completion of the most recent approved construction. The expansion factor to be used is 0.77. This allows the CFO to double the number of animals at the site while retaining the MDS it had before.

WHO IS CONSIDERED AN AFFECTED PARTY?

An "affected party" must be notified when an application for an approval or registration for a CFO is received by the NRCB. Affected parties can provide comments on a new or expanding operation's application. Affected parties include:

- The applicant.
- A person who resides on or owns land that is within the greater of 0.8 kilometres or the MDS of a registration-sized operation.
- A person or municipality that is entitled, under the Water Act, to divert water from the river, stream or canal within 16 kilometres downstream, as measured along the water course, if any part of the CFO facility is located or is to be located within 100 metres of the bank of a river, stream or canal.
- A person or municipality who resides on or owns land that is within the following distances from the boundary of a parcel of land on which an approval-sized CFO is located or is to be located:

Table 2 - Affected Party Notification Reference

Distance of affected party from the boundary of the land on which the CFO is or is to be located	Total proposed animal units
0.8 kilometres (0.5 mile)	500 or fewer
1.6 kilometres (1 mile)	501-1,000
2.4 kilometres (1.5 miles)	1,001-5,000
3.2 kilometres (2 miles)	5,001-10,000
4.8 kilometres (3 miles)	10,000-20,000
6.4 kilometres (4 miles)	20,001 or more

AOPA also includes a provision for the approval officer to obtain input from other parties and determine if they are directly affected. Only directly affected parties may request the Board to hold a review of the approval officer's decision on a permit.

A directly affected party is a neighbour, organization or member of the public that:

- submitted a statement of concern regarding an application, including reasons why the party should be considered directly affected for the application, and
- has been determined by the NRCB to be directly affected.



LAND BASE REQUIREMENTS

New or expanding CFOs applying for permits must show they have access to enough land to accommodate manure application based on soil nitrate-nitrogen limits. Operations need to develop either a nutrient management plan or a manure handling plan if they do not comply with the land base requirements. The land base requirement can be determined by using the land base tables in the Manure Characteristics and Land Base Code or through a nutrient management plan.

Nutrient Management Plans

These are not mandatory for all persons who apply manure. Under AOPA, an approved nutrient management plan is required if a person plans to exceed the soil nitrate-nitrogen or salinity limits set out in the regulations when applying manure. The NRCB can approve a nutrient management plan for applying manure in excess of the limits if the NRCB is satisfied that implementing the nutrient management plan will provide equal or greater protection to the soil and water (Standards and Administration Regulation, Section 26).

Manure Handling Plans

A person applying for a CFO permit can submit a manure handling plan to the NRCB to reduce or eliminate the need to meet the manure storage and application requirements under AOPA. For example, an operator may submit a manure handling plan where an agreement is in place with others who will be accepting the manure from the operation. Manure production and transfer records must be kept in these situations.



Manure Storage and Collection Areas

AOPA includes standards for the construction of solid and liquid manure storage facilities and manure collection areas (Standards and Administration Regulation, Sections 7, 8 and 9).

A manure storage facility is a facility for composting or storing manure, composting materials or compost. It does not include facilities at an equestrian stable, an auction market, a racetrack or exhibition grounds (Act, Section 1).

If 500 tonnes or more of manure are stored for more than seven months in a calendar year on the same spot, a permit must be obtained from the NRCB for a manure storage facility.

A manure collection area is considered to be the floor of a barn, the under-floor pits of a barn, the floor of a feedlot pen and a catch basin where manure collects. It does not include the floor of a livestock corral. (Act, Section 1).

SETBACKS

Common Body of Water

Manure storage facilities or manure collection areas must be constructed at least 30 metres away from a common body of water.

This does not apply if the owner or operator demonstrates to the NRCB, prior to construction, that either:

- The natural drainage from the facility or area is away from the common body of water, or
- A berm or other secondary protection for the common body of water constructed by the owner or operator protects the common body of water from contamination (Standards and Administration Regulation, Section 7).

Flooded Areas

A manure storage facility or manure collection area must not be in an area that floods.

- The 1:25 year maximum flood level at a manure storage facility or manure collection area must not be less than one metre below any part of the facility where run-on can come into contact with the stored manure.
- If the 1:25 year maximum flood level cannot be determined, the manure storage facility or manure collection area must be not less than one metre below any part of the facility where run-on from the highest known flood level can come into contact with the stored manure (Standards and Administration Regulation, Section 8).

Natural Water and Wells

Manure storage facilities and manure collection areas must be constructed at least 100 metres away from a spring or water well. This does not apply if the owner or operator:

- Demonstrates to the NRCB, prior to construction, that an aquifer from which the spring rises, or into which the water well is drilled, is not likely to be contaminated by the facility, and
- Implements a groundwater monitoring program if required by the NRCB (Standards and Administration Regulation, Section 7).

GROUNDWATER RESOURCE PROTECTION

AOPA addresses groundwater resource protection for all manure storage facilities and manure collection areas (for both solid and liquid manure). These structures must have either a protective layer or liner that lies below the bottom of the facility and above the uppermost groundwater resource of the site and also meets regulatory requirements (Standards and Administration Regulation, Section 9).

Protective Layers

These are one or more layers of naturally occurring materials that individually or in aggregate restrict the migration of the contents of the manure storage facility or the manure collection area. The base of the protective layer must be 1 metre or more above the top of the groundwater resource.

A protective layer for a manure storage facility and a manure collection area must provide equal or greater protection than that provided by naturally occurring materials:

- Liquid Manure Storage – The protective layer must be at least 10 metres in depth with a hydraulic conductivity of not more than 1×10^{-6} cm/s.
- Runoff Catch Basins – The protective layer must be at least 5 metres in depth with a hydraulic conductivity of not more than 1×10^{-6} cm/s.
- Solid Manure Storage Facility or Collection Area – The protective layer must be at least 2 metres in depth with a hydraulic conductivity of not more than 1×10^{-6} cm/s.

Liners

These are a layer constructed out of natural or manufactured material that restricts the migration of the contents of the manure storage facility or manure collection area. Where a liner is used, the bottom of the liner must be 1 metre or more above the water table at the site at the time of construction.

A liner can be constructed out of compacted soil, concrete, steel, or other synthetic or manufactured materials but must provide equal or greater protection than that provided by compacted soil.

- Liquid Manure Storage Facility – The liner must be at least 1 metre in depth with a hydraulic conductivity of not more than 1×10^{-7} cm/s.
- Runoff Catch Basins – The liner must be at least 1 metre in depth with a hydraulic conductivity of not more than 5×10^{-7} cm/s.

- Solid Manure Storage Facility or Collection Area – The liner must be at least 0.5 metres in depth with a hydraulic conductivity of not more than 5×10^{-7} cm/s.

Maintenance and Erosion Protection

The owner or operator of a manure storage facility or manure collection area must maintain the physical integrity of the liner or the protective layer. The inside and outside walls of a manure storage facility must be protected from erosion (Standards and Administration Regulation, Section 15).

Manure Storage Volumes

The owner or operator of a CFO must size and construct manure storages to accommodate nine consecutive months of manure production, or fewer consecutive months if the NRCB approves a manure handling plan submitted by the owner or operator (Standards and Administration Regulation, Section 10). This storage requirement does not apply to an owner or operator of a CFO who stores solid manure in accordance with short-term storage manure criteria (Standards and Administration Regulation, Section 5).

Surface Water Control Systems

To minimize run-on flowing through and runoff leaving a manure storage facility or manure collection area, surface water control systems are required. These systems must not significantly alter regular water flow, must not affect or alter a non-flowing water body and must not be located on a fish-bearing water body. The NRCB will determine if the system has to be designed and certified by a professional engineer (Standards and Administration Regulation, Section 6).

LIQUID MANURE STORAGE FACILITIES

Containment

An open-liquid manure storage facility requires a freeboard of no less than 0.5 metres. The owner or operator of an open liquid manure storage facility must provide a system of secondary containment for the liquid manure, if there is any possibility that it can be discharged into a common body of water, as determined by the NRCB.

Side Slopes

The following requirements are for side slopes (horizontal distance to vertical height) of a liquid earthen manure storage facility:

- Inside slopes must not be steeper than 3:1
- Outside slopes must not be steeper than 4:1

Filling

The pipe for filling the primary cell of a liquid manure storage must be located within the bottom quarter of the structure (Standards and Administration Regulation, Section 16).

Sealing

Piping and other extrusions to the liner of a manure storage facility must be sealed so they do not leak or create leaks in the liner (Standards and Administration Regulation, Section 17).

Leak Detection

If required by the NRCB, the owner or operator of a liquid manure storage facility must install and maintain a leakage detection system for the facility. These systems typically consist of at least one monitoring well up-gradient of the facility and at least two monitoring wells down-gradient of the facility and are monitored at regular intervals for contaminants (Standards and Administration Regulation, Section 18).

RUNOFF CONTROL CATCH BASIN

Runoff control catch basins must have the following:

- A storage capacity to accommodate a 1:30 year one-day rainfall,
- A visible marker that clearly indicates the minimum volume possible to accommodate the 1:30 year one-day rainfall event,
- A freeboard of not less than 0.5 metres when the basin is filled to capacity (Standards and Administration Regulation, Section 19).

SHORT-TERM SOLID MANURE STORAGE

Short-term solid manure storage sites can only be used for an accumulated total of seven months within a three-year period regardless of the amount of manure stored. In other words, manure can be stored in the field for up to seven consecutive months at one location, and then the site cannot be used for the next two years and five months. Feedlot pens are not considered short-term manure storage sites and must meet the requirements for a manure storage facility (Standards and Administration Regulation, Section 5).

Short-term solid manure storage sites must be located at least:

- 150 metres from a residence or occupied building that the producer does not own
- 100 metres from a spring or water well
- 1 metre above the water table
- 1 metre above the 1-in-25 year maximum flood level or 1 metre above the highest known flood level if the 1-in-25 year flood level is not known.

If the land slopes towards a common body of water, the setback distances in the following table must be observed for short-term solid manure storage.

Table 3 - Setbacks for short-term solid manure storage

Mean slope within 90 metres of a common body of water	Setback distance required from the common body of water
4% or less	30 m (100 ft)
Greater than 4% to less than 6%	60 m (200 ft)
6% or greater, but less than 12%	90 m (300 ft)
If the mean slope is 12% or greater, where the land slopes towards the common body of water, do not apply or store manure on the land.	

Other Requirements for New and Expanding CFOs

FLY AND DUST CONTROL

The owner or operator of a CFO or a manure storage facility must use reasonable measures to control fly infestation levels at a location occupied by the operation, facility or site. The NRCB may require an owner or operator to use a specific fly or dust control program at its facility or site (Standards and Administration Regulation, Section 20).

UNUSED OPERATION OR FACILITY

The owner or operator of land or buildings associated with a CFO, manure storage facilities or seasonal feeding and bedding sites that are not being used as such must remove the manure, compost and composting materials from the facility or buildings within 12 months or the time frame determined by the NRCB (Standards and Administration Regulation, Section 21).

VARIANCES

For new construction, applicants must be able to show that what is proposed meets or exceeds the requirements of the regulations. For existing facilities, proposed changes must provide more protection than currently exists (Act, Section 17).

Seasonal Feeding and Bedding (Wintering) Sites and Livestock Corrals

Seasonal feeding and bedding sites (wintering sites) and livestock corrals are not required to obtain a permit but must be sited and managed to protect surface water bodies. A seasonal feeding and bedding site or livestock corral must be located at least 30 metres away from a

common body of water. If this cannot be achieved, the operator must either design the site to divert runoff away from the common body of water or move the manure to an appropriate location away from the common body of water prior to a runoff event (Standards and Administration Regulation, Section 4).

Figure 1 - Wintering site or livestock corral setback distance requirements

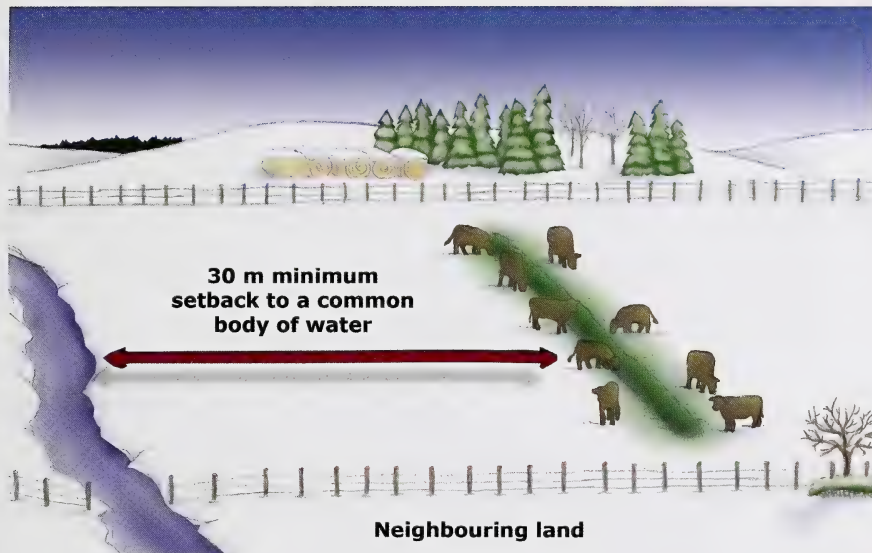
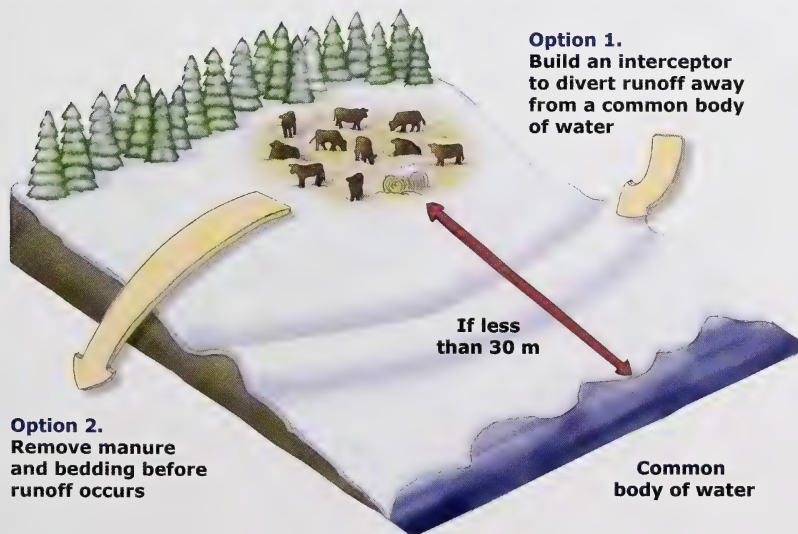


Figure 2 - Options for sites that do not meet 30m setback distance requirements



Manure Application

AOPA includes regulations for spreading manure for all agricultural operations in Alberta.

The manure spreading regulations apply to manure, compost and composting material. They include requirements for manure incorporation, soil nitrogen and salinity limits, setback distances, record keeping and soil testing.

IRRIGATION OF MANURE

A person who applies liquid manure or catch basin contents through an irrigation system must ensure that the manure or catch basin contents do not create a risk to the environment by leaving the land to which they are applied, by entering a common body of water or by becoming return flow. Liquid manure or catch basin contents cannot be applied through an irrigation system on a crop that is grown for human consumption and commonly eaten raw (Standards and Administration Regulation, Section 27).

MANURE INCORPORATION REQUIREMENTS

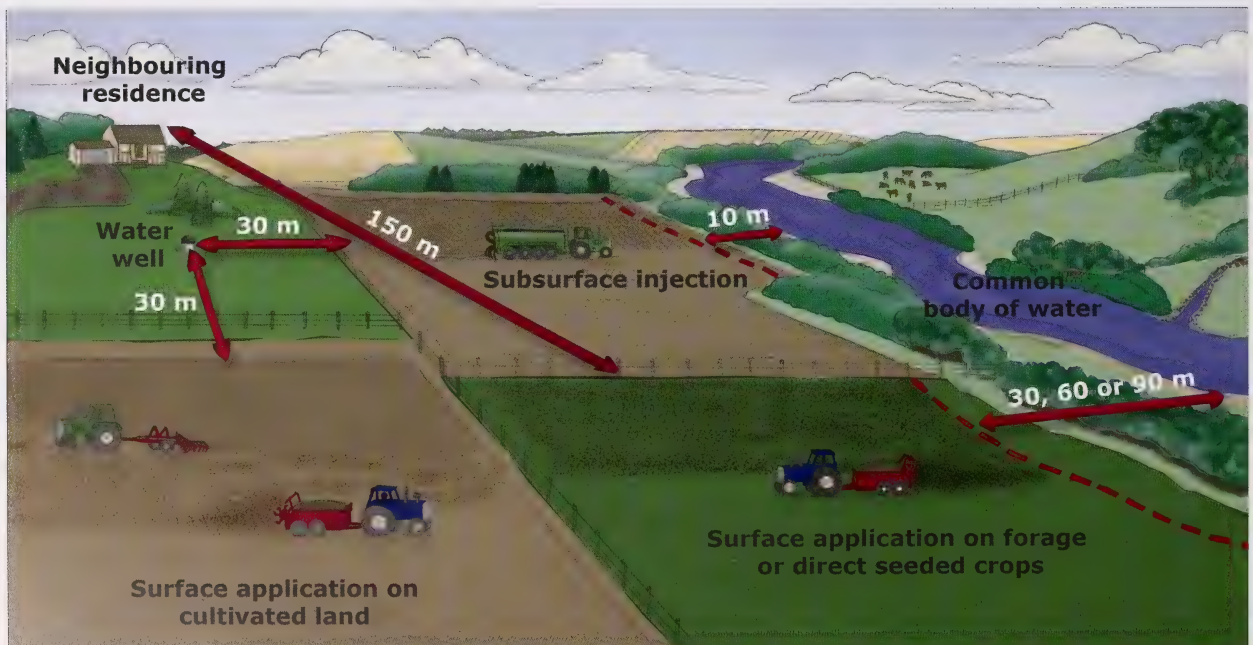
Manure must be incorporated within 48 hours when applied to cultivated land except when applied to forages or direct-seeded crops, frozen or snow-covered land (other requirements apply) or unless an operation has a permit that specifies additional requirements.

SETBACKS FOR MANURE APPLICATION

Setback distances are required to reduce nuisance impacts on neighbors and to minimize the risk of manure leaving the land on which it is applied and entering a common body of water. Manure must be applied at least:

- 150 metres away from a residence or other occupied building if the manure is not incorporated (Standards and Administration Regulation, Section 24).
- 30 metres away from a water well
- 10 metres away from a common body of water if subsurface injection is used
- 30 metres away from a common body of water if manure is surface-applied and incorporated within 48 hours of application, except when applied on forage, direct-seeded crops, frozen or snow-covered land.

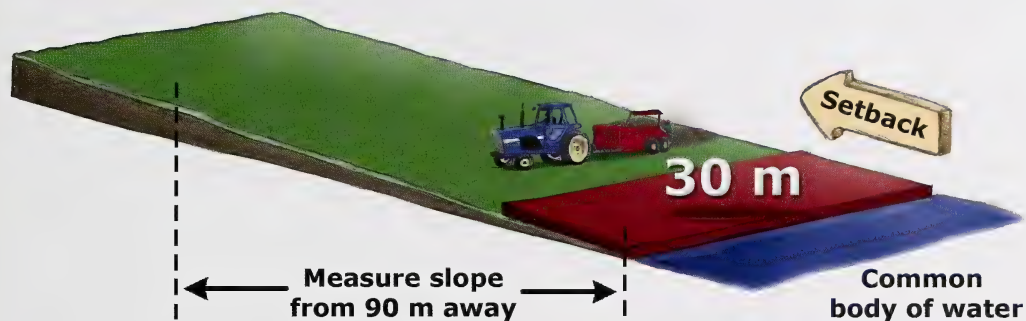
Figure 3 - Minimum setbacks for manure application



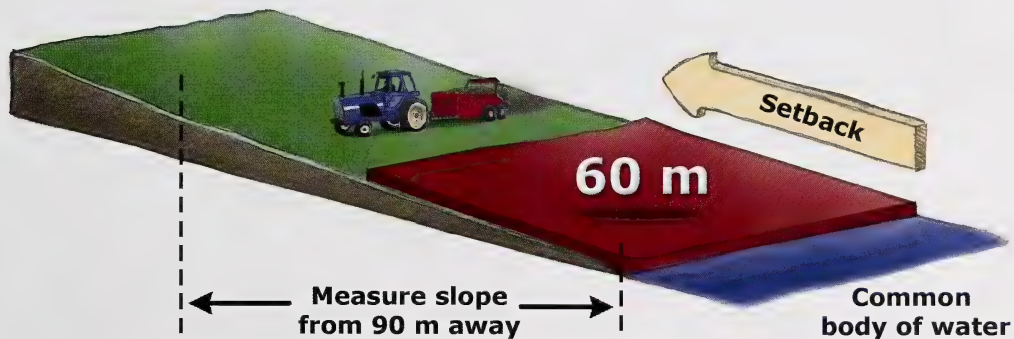
If the land slopes towards a common body of water, a person who applies manure on forage, direct-seeded crops, or frozen or snow-covered land must meet the setbacks for manure application based on the average slope of the terrain.

Figure 4 - Setbacks for manure application on land with various slopes (on forage, direct-seeded crops, frozen or snow-covered land)

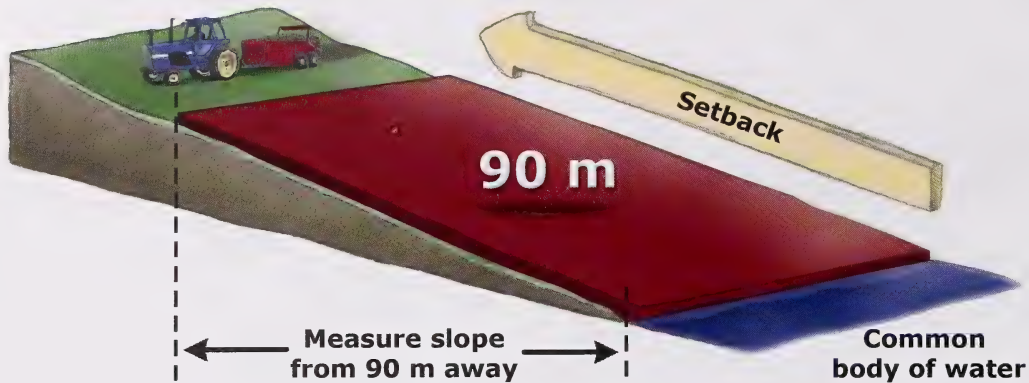
4% slope or less



4 - 6% slope



6 - 12% slope



✓ Manure can only be applied or stored once the slope to a common body of water is less than 12%

✗ Do not apply or store manure if the slope is 12% or greater to a common body of water

“ Anyone applying manure to land must take into account the incorporation requirements, soil nitrogen and salinity limits, setback distances to water and runoff risks. ”

MANURE APPLICATION LIMITS

The regulation sets soil nitrate-nitrogen and salinity limits for manure application. These limits can only be exceeded if a producer has a nutrient management plan that has been approved by the NRCB. (See the nutrient management plan section on page 8 for more information.)

Table 4 - Nitrate-nitrogen limits in soil (Standards and Administration Regulation, Schedule 3, Table 3)

Farming method	Soil group	Sandy (>45% sand and water table <4 m)	Sandy (>45% sand and water table >4 m)	Medium and fine textured soils
Dryland	Brown	80 kg/ha (75 lb/ac)	110 kg/ha (100 lb/ac)	140 kg/ha (125 lb/ac)
	Dark Brown	110 kg/ha (100 lb/ac)	140 kg/ha (125 lb/ac)	170 kg/ha (150 lb/ac)
	Black	140 kg/ha (125 lb/ac)	170 kg/ha (150 lb/ac)	225 kg/ha (200 lb/ac)
	Grey Wooded	110 kg/ha (100 lb/ac)	140 kg/ha (125 lb/ac)	170 kg/ha (150 lb/ac)
Irrigated	All groups	180 kg/ha (160 lb/ac)	225 kg/ha (200 lb/ac)	270 kg/ha (240 lb/ac)

Note: To convert kg/ha into lbs/ac, divide by 1.1 (eg. 110 kg/ha / 1.1 = 100 lbs/ac)

Soil Salinity

To ensure the salts in manure do not affect plant growth, the regulations specify that manure must not be applied:

- To soils that have an electrical conductivity (salinity) greater than 4 deciSiemens per metre (dS/m) from the top 0 to 15 centimetres of the soil,
- At levels that would increase the soil salinity (after manure is applied) by more than 1 dS/m from a soil depth of 0 to 15 centimetres from what it was prior to manure being applied to the soil.

SOIL TESTING AND ANALYSIS

No soil testing is required for operations that handle less than 500 tonnes of manure annually. Operations that apply a total of 500 tonnes or more of manure in a year must have soil test information that is less than three years old for the fields on which manure is to be applied. If an operation applies more than once every three years to a field, the operation must still stay within the specified limits in the regulations for soil nitrate-nitrogen and salinity (Standards and Administration Regulation, Schedule 3).

Soil Nitrate-Nitrogen

The soil nitrate-nitrogen limits are set according to soil groups, soil textures, the depth to the water table and dryland or irrigated crop production. The following table specifies the nitrate-nitrogen levels that may not be exceeded in the top 60 centimetres of soil.

For each field on which manure is applied:

Test once only for the following:

- Soil texture, from a soil depth of 0 to 15 centimetres and 15 to 30 centimetres

Test once every three years for the following:

- extractable nitrate-nitrogen ($\text{NO}_3\text{-N}$) from a soil depth of 0 to 60 centimetres
- soil salinity based on electrical conductivity (EC) from a soil depth of 0 to 15 centimetres

Record Keeping

CFOs, custom manure applicators, cow/calf producers and others who apply, transfer or receive more than 500 tonnes of manure per year must keep records for a minimum of five years. Record keeping is not required for any operation that handles less than 500 tonnes of manure per year (Standards and Administration Regulation, Section 28).

The following types of activities require record keeping:

- manure production
- manure transfer
- manure application

Note: Examples of forms are available online at www.agric.gov.ab.ca or www.nrcb.gov.ab.ca or by calling an Alberta Agriculture and Rural Development extension specialist or an NRCB regional office listed at the end of this publication.

MANURE PRODUCTION RECORDS

A CFO owner or operator must keep the following records:

- volume or weight of manure produced
- name and mailing address or legal land description of a person to whom control of a total of 500 tonnes or more of manure is transferred in a year
- date of the manure transfer
- volume or weight of manure transferred

MANURE TRANSFER RECORDS

Anyone who transfers control, receives or removes 500 tonnes or more per year of manure must keep records of the following:

- name and address of the person from whom manure is transferred, received or removed
- date the manure is transferred, received or removed
- volume or weight of manure that has been transferred, received or removed

MANURE APPLICATION RECORDS

A person who applies a total of 500 tonnes or more of manure in a year to land under the person's control (usually the owner or renter) must keep the following records:

- name and address of the person from whom manure is received
- date the manure is received
- volume or weight of manure, composting materials or compost received
- legal land description of the land to which manure is applied
- area of the land to which manure is applied

- date the manure is applied
- volume or weight of manure applied
- application rates of manure nutrients and fertilizer by field and year
- dates of application and incorporation and the methods used for each field
- soil test results

Note: AOPA record keeping requirements do not apply to grazing livestock. However, all livestock operations are subject to the standards for manure collection areas, as well as manure application and storage setback distances from neighbours and common bodies of water.

Ongoing Compliance and Enforcement

An inspection of a CFO, manure collection area, manure storage facility or land to which manure is being applied can be triggered if the NRCB receives a complaint. NRCB inspectors typically look at potential risks to the environment or problems related to manure handling, storage and application. If a problem is found, inspectors will work with operators to get it resolved. If this approach is not successful, inspectors can escalate their approach to get the problem resolved.

When determining the appropriate enforcement response, inspectors consider the significance of any non-compliance, as well as the risk to the environment, and the operator's willingness to address the issue voluntarily.

The NRCB may issue an enforcement order to compel producers to rectify a situation (Act, Section 39). If a situation poses an immediate environmental risk, the NRCB may issue an emergency order and take corrective action. If a producer refuses, hinders or interferes with an inspector during a field inspection, the inspector may apply to the Court of Queen's Bench for a court order. A person who contravenes the regulations or certain sections of AOPA may be liable for a fine (Act, Sections 34, 35, and 36).

Glossary

Catch Basin

An excavation, diked or walled structure or a combination of structures that are designed to intercept and store runoff (Standards and Administration Regulation, Section 1).

Common Body of Water

The term "common body of water" in the legislation includes the bed and shore of a water body that is shared by (common to) more than one landowner. The following table summarizes what is and is not considered a common body of water.

A common body of water includes	A common body of water does not include
The bed and shore of the following: • River, stream, creek • Reservoir, lake, marsh, slough • Irrigation canal • Drainage canal	A reservoir, lake, marsh, slough, or temporary stream that is completely surrounded by private land controlled by the owner or operator and has no outflow going directly beyond the private land to a drainage canal, reservoir, river, permanent stream or creek, lake or potable water source that is being used for human or livestock consumption.
	An irrigation canal or a drainage canal that is completely surrounded by private land controlled by the owner or operator and has no outflow going beyond the private land.
	A roadside ditch.
	A storm drainage or wastewater system (sewer system).

Compost

Compost is the product of controlled aerobic decomposition of manure that results in a stable material but does not include compost to which the *Fertilizers Act* (Canada) applies (Act, Section 1). For storage and application purposes, compost is treated the same as manure.

Composting

A controlled process of aerobic decomposition of organic materials that includes a thermophilic phase.

Composting Materials

Organic material, to be used in composting, generated by an agricultural operation from the raising of livestock, including game production animals (within the meaning of the *Livestock Industry Diversification Act*) and poultry, as well as the production of agricultural field crops, fruit, vegetables, sod, trees, shrubs and other specialty horticultural crops, or the production of eggs and milk. Also includes other substances permitted by the regulations, but does not include carcasses or parts of carcasses.

Confined Feeding Operation (CFO)

Fenced or enclosed land or buildings where livestock are confined for the purpose of growing, sustaining, finishing or breeding by means other than grazing and any other building or structure directly related to that purpose. Does not include residences, grazing livestock operations, seasonal feeding and bedding sites, equestrian stables, auction markets, racetracks or exhibition grounds (Act, Section 1).

Freeboard

The vertical distance between the full storage level of a structure and the lowest point on the upper edge of the structure.

Groundwater Resource

An aquifer below the site of a CFO or a manure storage facility that is being used as a water supply for the purposes of domestic use. If no aquifer below the CFO is being used for domestic purposes, it is an aquifer that has a sustained yield of 0.76 litres per minute or more and total dissolved solids concentration of 4,000 milligrams per litre (mg/L) or less. If there is more than one aquifer that meets this criteria, it is the aquifer that the approval officer or the Board considers best suited for development as a water supply for the purposes of domestic use.

Manure

Livestock excreta, associated feed losses, bedding, litter, soil and wash water. Does not include manure to which the Fertilizers Act (Canada) applies (Act, Section 1).

Manure Collection Area

The floor of a barn, the under-floor pits of a barn, the floor of a feedlot pen and a catch basin where manure collects. Does not include the floor of a livestock corral (Act, Section 1).

Manure Storage Facility

A facility for composting or storing manure, composting materials or compost. Does not include facilities at an equestrian stable, an auction market, a racetrack or exhibition grounds (Act, Section 1).

Runoff

Liquid that drains, as surface flow, out of an agricultural operation or part of an agricultural operation, including rainwater and meltwater (Standards and Administration Regulation, Section 1).

Run-on

Liquid that drains, as surface flow, onto an agricultural operation or part of an agricultural operation, including rainwater and meltwater (Standards and Administration Regulation, Section 1).

Seasonal Feeding and Bedding Sites

An over-wintering site where livestock are fed and sheltered (Act, Section 1).

Short-term Solid Manure Storage

Short-term is defined as an accumulated total of not more than seven months over a three-year period. Does not apply to feedlots or livestock corrals (Standards and Administration Regulation, Section 5).

Third Party Feedstock

Manure or compost from another CFO.

Water Table

The top of the water saturation zone where water pressure equals atmospheric pressure regardless of whether the water is usable (Standards and Administration Regulation, Section 1).

Water Well

As defined under the Water Act, an opening in the ground, whether drilled or altered from its natural state that is used for:

- Producing groundwater for any purpose
- Obtaining data on groundwater
- Recharging an underground formation from which groundwater can be recovered.

Includes any related equipment, buildings, structures and accessories.

Key Contacts

Alberta Agriculture and Rural Development (ARD)

is the provincial ministry responsible for developing and updating AOPA to ensure that it meets the needs of the livestock industry and the public. ARD also provides information, extension and applied research services to the livestock industry.

The Natural Resources Conservation Board (NRCB)

is an agency of the Government of Alberta. It is responsible for regulatory functions under AOPA, processing applications and ensuring compliance with the Act and regulations. The Board functions as an appeal body under AOPA.

Municipal governments are invited to provide input on all AOPA applications within their municipal boundaries and to develop land-use provisions within their municipal development plans that identify where new and expanding CFOs would not be compatible with current or future land uses. Municipal governments are considered directly affected parties for all CFO applications and their views are an important part of siting decisions for new and expanding CFOs.

For more information:

(Dial 310-0000 to be connected toll-free)

Alberta Agriculture and Rural Development (ARD)

Website: www.agric.gov.ab.ca
Publications: 1-800-292-5697
Ag-Info Centre 310-3276

CFO Extension Specialist Offices

Lethbridge: (403) 381-5885
Red Deer: (403) 755-1475
Morinville: (780) 939-1218

Natural Resources Conservation Board (NRCB)

Website: www.nrcb.gov.ab.ca
For concerns about CFOs or the storage and handling of manure on any operation.
Response Line: 1-866-383-6722 (24 hrs toll-free)

Regional Offices

Lethbridge: (403) 381-5166
Red Deer: (403) 340-5241
Morinville: (780) 939-1212
Fairview: (780) 835-7111

For a copy of AOPA, contact the Queen's printer at (780) 427-4952 or www.gov.ab.ca/qp

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